



FINAL MEETING SUMMARY

**HANFORD ADVISORY BOARD
TANK WASTE COMMITTEE**

*August 10, 2016
Richland, WA*

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This is only a summary of issues and actions discussed at this meeting. It may not represent the fullness of represented ideas or opinions, and it should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.

Opening

Melanie Myers-Magnuson, Tank Waste Committee (TWC) vice chair, welcomed committee members and introductions were made. Committee members adopted the April 2016 TWC meeting summary.

Announcements

Melanie announced that several TWC members participated in a meeting with the chair of the Defense Nuclear Facilities Safety Board (DNFSB) on August 3, 2016. She noted that information was shared and a brief overview of the Hanford Advisory Board (HAB or Board) was presented to DNFSB members. The DNFSB chair encouraged the HAB to bring topics of concern to the Board's attention. Melanie stated that topics related to budget were discussed at the meeting.

Vapors Monitoring Detection Update (Joint w/HSEP)

Agency Presentation

Karthik Subramanian, Washington River Protection Solutions (WRPS), provided TWC members with an update on vapor monitoring and detection systems technologies. Key points from Karthik's presentation¹ include:

- The Tank Vapor Assessment Team recommended the use of instruments to detect and control vapor emissions and exposures experienced in the Hanford tank farms.
- WRPS's goal is to deploy wireless equipment that can perform real time and space measurements. Several technologies were deployed in the vapor monitoring and detection system package including monitoring for known sources, fugitive emissions, and potential vapors in work zones and at fence boundaries. Technologies selected include:
 - Direct reading instruments (DRIs) that can measure the total volatile organic chemicals (VOCs) in the air. DRIs provide limited specific chemical analyses.
 - Spectroscopic instruments provide more comprehensive specific chemical species information.
- The wireless, real-time detection and monitoring system is coupled with meteorological data and a worker's GPS location. A modeling program called SAFER Systems receives and evaluates data to detect the location of vapor plumes.
- The technology maturation process needs to be rigorous and well-integrated. Bench-scale testing was performed at the Pacific Northwest National Laboratory (PNNL), including the testing of sensors, a weather station, and SAFER software.
- WRPS installed the equipment and software for pilot-testing at the A and AP Tank Farms. There are challenges with integrating software systems and communication technologies.
- The equipment installed at the A and AP Tank Farms will collect species data for numerous VOCs including ammonia, carbon monoxide, and nitrous oxide. An ultraviolet differential optical

Attachment 1: Vapor Monitoring, and Detection System (VDMS) Technologies (WRPS, 8/10/16)

absorption spectrometer can detect the species in the ultraviolet system between two points in the field.

- In the testing that has occurred thus far, a SUMMA canister captures air if fugitive emissions are detected. The SUMMA canister is wireless and can be triggered remotely from inside the control room. The air captured is tested in the lab.
- Emissions are monitored through infrared and ultraviolet equipment installed on stacks in the AP Tank Farm.
- The Proton Transfer Reaction Mass Spectrometry (PTR-MS) Mobile Laboratory can detect 46 of 59 chemicals of potential concern (COPC). The laboratory has completed four, one-week test campaigns. The vapors detected have been consistent with the identified combustion sources.
- Most of the vapor monitoring and detection system technologies are installed and ready for configuration or already undergoing testing. The next phase of the project will evaluate if vapor abatement is an appropriate tool to use in the future.

Agency perspectives

John Martell, Washington State Department of Health (DOH), informed TWC members that DOH has inspectors on the A and AP Tank Farm sites and are communicating well with the U.S. Department of Energy – Office of River Protection (DOE-ORP) to understand existing hazards. DOH has begun discussions with WRPS about future corrective actions, including licensing activities.

Committee Questions and Responses²

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q. Are captured air samples taken to PNNL and tested with a spectrometer?

R. [WRPS] Yes. Samples can also be tested with a gas chromatograph mass spectrometer (GC-MS).

Q. Is the vapor monitoring and detection system set up to run twenty-four hours?

R. [WRPS] Yes, the pilot-scale testing is monitoring twenty-four hours a day, seven days a week.

Q. How does WRPS determine which COPCs remain on the list to monitor and detect?

R. [WRPS] If a chemical is measured at the tank source, that chemical will be added to the list of chemicals to be monitored. As monitoring continues, other COPCs could be added to the list.

C. WRPS ought to make an appointment with the Washington State governor and attorney general to inform them of this detection system and the technologies.

Attachment 2: Transcribed flipchart notes

Q. Can the deployed technology detect low levels for emitted chemicals such as N,N-dimethylnitrosoamine and N,N-methylethyl nitrosoamines since these are potentially the bad actors?

R. [WRPS] The long-distance path infrared spectrum can evaluate the total amount of nitrosamine. The PTR-MS can evaluate the amount of diethanol.

Q. What is the process for deciding what aspect of the data will generate a response? Do the instruments provide accurate detection of total VOCs?

R. [WRPS] The goal is to provide more data in order to respond in real time. WRPS will continue to use the existing processes that are implemented to detect responses. The chemicals are within the detection limits.

Q. There is a past history of unknown hazardous chemicals that are generated from tank waste. How confident is WRPS that the instruments are detecting these chemicals? How will the detection of unknown chemicals impact the project cost, schedule, and milestones?

R. [WRPS] The detection program is monitoring the air space above the tanks, not the waste inside of the tank. Head space characterization data on the tanks was performed before the monitoring equipment was installed. WRPS will compare the current data with the historical data to track any changes in the detected chemicals. Another project member can provide more details on the project cost, schedule, and milestones.

C. Approximately 15-20 years ago, the double-shell tanks in the SY Tank Farms rolled over and burped gas. The content of that gas had a mix of chemicals that are incompatible. The typical chemicals in the head space characterization of a tank may not be what is expected. DOE-ORP should share all of the available information about tank waste chemicals with WRPS.

Q. If a worker was exposed to tank vapors, how would that individual share the total VOC amount with their doctor, in order to receive the appropriate treatment?

R. [WRPS] Every employee has access to the data that are collected in the field. It will depend on if the worker's physician can interpret the VOC information. If an employee believes they have been exposed to vapors in the field, they report to an onsite Hanford medical provider. Data can be made available to workers, whether it is from publicly available online sources or from personal detection devices (which are not available to the public). Right now, there is a lag in the data due to the large amount of data collection occurring during the pilot-scale testing. The long-term goal would be to provide an exposed employee and the on-site medical provider with real-time information.

Q. Will the vapors detection and monitoring system be refined to anticipate an event where a tank burps, rolls over, or has a large amount of gas escape?

R. [WRPS] The goal of the program is to protect Hanford's work force. It is too soon in the program to identify long-term trends and patterns of the air space characterization of the tanks. If trends appear over time, WRPS will provide corrective actions.

Q. What is the timeline for declaring this program successful? What program requirements are under review to ensure that nothing is missed during the pilot-scale testing?

R. [WRPS] The pilot-scale testing in the AP Tank Farm began on August 8, 2016. The goal is to implement the program in fiscal year (FY) 2017. WRPS will continue data collection and monitoring as the program is undergoing implementation.

Q. Will COPCs collected from air samples undergo further analyses if they are not detected by GC-MS or PTR-MS?

R. [WRPS] Neither the GC-MS or PTR-MS only evaluate COPCs. The equipment is detecting every possible chemical. WRPS will evaluate the sample further, as needed.

Q. How are quality assurance programs being set up?

R. [WRPS] Quality assurance requirements of nuclear safety will be defined NQA-1. The program went through a rigorous review process. The quality assurance program includes procurement, testing, and factory acceptance testing. There are quality assurance programs at PNNL that will assist these efforts.

Q. There is an expectation to gather data in a sufficient manner to determine why tank vapor events are occurring. Will similar measurements be applied to the tank waste?

R. [WRPS] The tank vapor data will be corroborated with metrological data such as temperature, humidity, and wind speed. The equipment does not give constructive readings of the chemicals inside the tank. The goal is to measure and monitor tank vapors to protect workers.

C. If the source of the waste can be predicted, one could potentially avoid the impact of exposure entirely.

R. [WRPS] WRPS will keep that in mind as they move further.

Q. How often are data samples collected?

R. [WRPS] Equipment is collecting data at a frequency of 1-10 seconds during the pilot-scale testing. The frequency of data collection after the program is implemented is to be determined.

Peter Bengtson, WRPS, shared the Hanford Tank Vapors website with the TWC. The website was created in June, where real-time tank vapor information is accessible. Peter noted that the website has a subscription service to receive notifications about recent postings, in addition to social media accounts like Twitter and Facebook. Peter encouraged TWC members to share the website with their constituents.

TWC members thanked Karthik, John, and Peter for their presentation and perspectives. The TWC requested that Karthik and Peter share this presentation, along with any updates, at the December Board meeting.

Tank Integrity

Dirk Dunning, issue manager, introduced the Tank Integrity Program, noting that he and other TWC members have attended technical workshops where the determination of tank integrity was discussed. Dirk noted that DOE-ORP is analyzing the integrity of the secondary and primary tanks.

Agency Presentation

Jeremy Johnson, DOE-ORP, provided TWC members with an overview of the Tank Integrity Program. Key points from Jeremy's presentation³ included:

- The Tank Integrity Program includes monitoring activities, an integrity assessment, and an expert panel for double-shell tanks (DSTs) and single-shell tanks (SSTs). The frequency of tank inspection is increasing to maintain controls for activities occurring in the field.
- Monitoring activities for DSTs include ultrasonic testing, visual inspection, chemistry optimization, and structural integrity, including dome deflection surveys to monitor the settling of tanks.
- Monitoring activities for SSTs include stabilization and isolation. Dome deflection surveys are also performed on SSTs.
- There is an oversight committee for tank corrosion testing and monitoring. The expert panel meets approximately twice per year.
- There are 149 SSTs built between 1944 and 1965. SSTs were removed from service in 1980. There is limited access for inspecting SSTs, which are inspected via risers at the top of the tank.
- SSTs are well beyond the design life and many of the tanks have leaked in the past. Currently, Tank T-111 is the only identified leaking SST.
- Monitoring and maintaining the integrity of SSTs will be a key issue until waste retrieval is completed and the tanks are closed.
- The primary function of the SST integrity program includes: periodic dome deflection surveys, waste liquid level evaluations, visual inspections, intrusion mitigation, evaporation of liquids, corrosion testing, and evaluation of new monitoring technology.
- The SST integrity program has completed seventeen Tri-Party Agreement (TPA) milestones and targets including the Analysis of Record, the C-107 dome plug, and A-106 core sample.
- The path forward for the SST integrity program will include leak assessments, in-tank visual inspections, waste level changes and intrusion evaluations, and continued mitigation of leaking Tank T-111.

Attachment 3: Tank Integrity Program Overview (DOE-ORP, 8/10/16)

- Six tanks from the list of assumed leaking tanks have been eliminated after leak assessment monitoring
- About twelve tanks are visually inspected each year
- The portable exhaust system has removed approximately 6,500 gallons of liquid waste from T-111
- The main difference between the design of SSTs and DSTs is the annulus between the two walls of the DSTs. This space allows better access for inspecting the primary tank. There is limited access for inspecting the secondary tank of DSTs.
- The primary objectives of the DST Integrity Program include: maintain DSTs to safely store and transfer 56 million gallons of high-level waste for treatment, extend the life of DSTs to support Waste Treatment Plant (WTP) operations, and to monitor tank integrity to inform decisions for repair or replacement.
- The primary tank wall and annulus floor of each tank is inspected approximately every ten years. The wall and floor are inspected for cracks and thinning of steel.
- Waste chemistry sampling and corrosion control studies are performed, as well as periodic testing of the ancillary equipment and the 242-A Evaporator.
- Structural analyses of the tanks are conducted for thermal, operating, and seismic loads.
- A leak in Tank AY-102 was detected in 2012 and undergoes inspection about every two weeks. Corrosion testing indicates that leaked waste does not pose a realistic threat to the integrity of the tank's liner.
- A second Independent Qualified Registered Professional Engineer (IQRPE) assessment was released earlier in 2016 and underwent review by the Washington State Department of Ecology (Ecology). The assessment concluded that the DST system is fit for use, with the exception of Tank AY-102. The next IQRPE assessment is required in 2026.
- The Tank Integrity Expert Panel relies on evaluations and recommendations by experts from a variety of private and government organizations. The panel meets twice a year to provide advice and recommendations to DOE-ORP and WRPS on existing and emerging tank integrity issues, with a focus on safety. The panel recommends the following:
 - Continue existing corrosion and refractory testing
 - Obtain a sample of the waste in AY-102 to determine corrosion threats to the secondary liner
 - Utilize remote inspection techniques
 - Confirm the integrity of Tank AY-102 and other tanks' secondary liners using ultrasonic scanning equipment

- The secondary liner of seven tanks were inspected and wall thinning was observed on six tanks. Tank AP-102 had approximately 70% wall thinning in very small area. Tanks that have a history of water accumulating in the leak detection pit will be prioritized. There are three tanks scheduled for ultrasonic testing in FY 2017.
- The path forward for the Tank Integrity Program has the following goals:
 - Develop capabilities for increased scanning of the floor and implement new technologies
 - Eliminate/reduce/reverse annulus vacuum
 - Inspect additional leak detection pit drain lines and obtain samples
 - Perform additional corrosion testing
- A mitigation strategy was developed and will be released in the near future. DOE-HQ environmental management division will lead a programmatic risk evaluation in mid-August.

Agency Perspective

Steve Lowe, Ecology, expanded on the agency's comments on the IQPRE assessment. Steve noted that the majority of Ecology's concerns were about issues identified in the 2006 IQRPE assessment that were excluded from the 2016 IQPRE assessment. There were several DSTs determined fit for use with no compliant transfer lines and essential noncompliant components. Steve stated that the earlier report had a mission end date of 2028. The High-Level Waste Vitrification (HLW-Vit) Facility operations start date was delayed to 2033, which extends the mission's overall end date. In addition, there are concerns about the availability of lines to supply feed to HLW-Vit. Beginning in 2025, DOE-ORP wants to use the cross-site transfer line to feed waste from the 200 West Area to the Low-Activity Waste Pretreatment Facility (LAWPS) and WTP (Waste Treatment and Immobilization Plant). Prior to this, DOE will need to create a plan for scheduling tank farm infrastructure upgrades.

Dan McDonald, Ecology, provided his perspective on the Tank Integrity Program. Dan commented that mechanisms for transferring waste need to be upgraded and determined ready for use in order to support operations of the HLW-Vit and LAWPS well before they begin.

Ecology noted that they will need to continue working closely with DOE-ORP to resolve issues and ensure that all the remaining pieces are identified, upgraded, and thoroughly reviewed before waste feeds are directed to LAWPS and WTP.

Committee Questions and Responses²

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q. Does the monitoring probe evaluate the metal or the waste inside a tank?

R. [WRPS] The probe monitors the metal inside of the tank. The largest threats to the tank are thinning and fractures.

Q. Is Tank AY-102 continuing to leak?

R. [DOE-ORP] Sluicing operations were successful, which leads to little liquid remaining in the primary tank. Other retrieval equipment was placed in the tank to dry it out after sluicing operations concluded.

Q. Is Tank AY-102 generating heat?

R. [DOE-ORP] The concerns for heat have lessened since 2012. The generation of heat was reduced considerably once crews began removing solids from the tank.

Q. Has the location of the leak been detected in Tank AY-102?

R. [DOE-ORP] The retrieval technology and techniques limit how much of the tank can be inspected. When crews finish retrieving solids out of the primary tank, there may be an ideal spot to inspect the leak site.

Q. When does DOE-ORP expect to begin using the evaporator again?

R. [DOE-ORP] Operating the evaporator has been delayed until January 2017, per the pending court date related to tank farm operations.

C. There is an inability to accurately predict the future integrity of tanks. Those inabilities include: solids in waste are not capable of inspection due to refractory channels, the bottom of secondary tanks are not accessible for inspection, the thickness of the tanks is not uniform, and most DSTs have water beneath them. Unknown parameters lead to lack of confidence in correctly identifying corrosion and other integrity issues.

Q. Attending the Tank Integrity Expert Panel is helpful. Will there be an opportunity to sit in on the DOE-HQ risk evaluation review?

[DOE-ORP] The agency can continue to invite HAB members to attend the Tank Integrity Expert Panel meetings. DOE-ORP will ask if TWC members can sit in on the DOE-HQ review process.

Q. What is the path forward for Tank T-111?

R. [DOE-ORP] The plan is to use the portable exhauster to reduce the volume of liquid waste.

Q. Will DOE-HQ use the intrusion data to create their plan?

R. [DOE-ORP] DOE-HQ will evaluate the Tank Integrity Program as a whole, including a review of intrusion and leaks. DOE-HQ will then create a proposed plan of action and determine priorities. The review process should be completed quickly, as the draft report is anticipated to be released by the end of September.

C. Please share the results of the review process with the HAB.

C. The TWC wrote advice to receive a comprehensive roadmap for Ecology's permitting process. If the cross-site transfer lines are not qualified for use, there need to be greater assurances in place.

R. [Ecology] Previous system planning has been done in the past, but there is a limited level of detail.

R. [DOE-ORP] An infrastructure upgrade plan and priorities list is released yearly, which outlines some of this information.

Q. Was Tank T-111 a salt well pump?

R. T-111 was a salt well pump, but was not effective because most of it was sludge.

Q. How often are liquids sampled in DSTs?

R. [DOE-ORP] It depends on the tank, but typically tank liquids are sampled every five to seven years.

Q. Are core samples of tank waste taken at various levels? Since tanks do not have perfect mixing, is one measurement an accurate representation of the entire tank?

R. [DOE-ORP] Once the sampling plan is developed, crews will take multiple samples, from one location, of liquid waste at various depths.

C. Experts looked into adding ammonia gas to SSTs to limit corrosion. The waste in DSTs are not mixed or stirred, which results in chemical depletion.

TWC members thanked Jeremy, Steve, and Dan for their presentations and perspectives. The TWC will tentatively plan to receive an update on the Tank Integrity Program at the TWC meeting in November.

WTP Technical Issues Resolution

Agency Presentation

Langdon Holton, DOE-ORP, provided TWC members with an update on the resolution for technical issues related to the Waste Treatment and Immobilization Plant (WTP). Key points from Langdon's presentation⁴ include:

- The mission of WTP is to immobilize Hanford's high-level radioactive waste into glass. Vitrification is the selected technology for immobilizing the waste for safer long-term storage.
- WTP facilities include the Pretreatment Facility (PT), Analytical Laboratory, Low-Activity Waste Facility (LAW), and the High-Level Waste Facility (HLW).
- The PT Facility will separate the low-activity waste from the high-level radioactive waste. Waste is concentrated by removing water using an evaporator.
- In late 2012, DOE-ORP limited project activities at the PT Facility. Restrictions were imposed on engineering, procurement, and construction work due to unresolved technical, management, and quality issues and the need for design and nuclear safety basis alignment.
- In 2013, DOE-ORP determined that the standard high solids vessel (SHSV) design needed to change. The agency performed a cost/benefit evaluation and discovered that they could compress the time for resolving technical issues and avoid millions of dollars in cost.
- Eight issues have been identified for the PT Facility and are included in the Consent Decree. The following technical issues and statuses include:
 - T-1: Hydrogen Gas Events in Vessels
 - Status: DOE-ORP is currently reviewing the WTP Contractor Engineering Study. The resolution is anticipated in the fourth quarter of calendar year (CY) 2016.
 - T-2: Criticality in Pulse-Jet Mixer (PJM) Vessels
 - Status: DOE-ORP has reviewed and accepted an updated WTP Criticality Safety Evaluation Report and Engineering Study, evaluating heavy plutonium particulate treatment in the PT Facility. The resolution is anticipated in the fourth quarter of CY 2016.
 - T-3: Hydrogen in Piping and Ancillary Vessels
 - Status: DOE-ORP is evaluating a preliminary documented safety analysis change package, consequence calculation, and proposed update to the WTP design basis. The resolution is anticipated in the fourth quarter of CY 2016.

Attachment 4: WTP Technical Issue Resolution Update (DOE-ORP, 8/10/16)

- T-4: PJM Vessel Mixing and Control
 - Status: Testing phases 1 and 2 of the PJM control system are complete. The standard high-solid vessel (SHSV) prototype was fabricated and delivered to the Richland Testing Facility on July 14, 2016. The test plan for PJM control and mixing tests for the SHSV prototype are in final development. The plan is expected to be released in the fourth quarter of CY 2016.
- T-5: Erosion/Corrosion in Piping and Vessels
 - Status: The evaluation of wear in piping is complete and the test plan is undergoing final development. Corrosion testing is underway.
- T-6: Design Redundancy/In-Service Inspection
 - Status: The conceptual design study is underway to provide a basis for implementing the standard high-solid vessel prototype into pretreatment.
- T-7: Black Cell Vessel/Equipment Structural Integrity
 - Status: The structural design of the SHSV-test vessel is complete and the structural design of the SHSV-plant vessel is near completion. The fitness for service evaluation of vessels are in progress. The SHSV design test vessel can hold up to 22,000 gallons of liquid. Testing will continue throughout FY 2016 and in FY 2017.
- T-8: Facility Ventilation/Process Off-Gas Treatment
 - Status: The design of the PJM vessel in the off-gas treatment system is under review. The review plan of the PT Facility's ventilation system design is in progress.

Agency Perspective

Dan McDonald, Ecology, noted that the WTP has complex issues and it is important to think about the issues as a whole, with an optimal solution. He commented that the entire fluid transport system needs to be evaluated to ensure that the system can operate efficiently.

Committee Questions and Responses²

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q. Are there concerns about the size of the plutonium particles?

R. [DOE-ORP] Yes, the material needs to be less than 30 microns.

Attachment 2: Transcribed Flipchart Notes

Q. The PJMs used to be smaller and located at the bottom of the tank. Do the PJMs fill up the tank now?

R. [DOE-ORP] Yes, the PJMs extend to the bottom of the tank. The facility design may be discussed in upcoming meetings.

Q. How do the PJM vessels work and how are they different?

R. [DOE-ORP] The vessel is a tube filled with fluid. Pressure creates a vacuum in a pipe on top of the PJM vessel, which push/pulls the fluid in the direction specified. There are twenty different PJM vessel designs.

Q. Will the Analytical Laboratory serve another purpose on the Hanford Site once the PT Facility is operational?

R. [DOE-ORP] Bechtel is renting the Analytical Laboratory from Washington State University. Bechtel will have to ask for directions on how to dispose of the equipment when they are finished.

Q. Will DOE-ORP require a full design from Bechtel before procurement?

R. [DOE-ORP] The design needs to be demonstrated through appropriate analyses with alignment between the design and safety issues before procurement is allowed.

Q. What measures are in place to ensure that the design is correct this time?

R. [DOE-ORP] In September 2015, DOE-ORP contracted Parsons Engineering to oversee the design and start-up operations.

Q. What happens if Ecology identifies concerns or errors in the review process?

R. [DOE-ORP] Ecology and DOE-ORP have to accept the design and the PT Facility's functions. There will be controls on procurement and construction, including the permit modification.

Q. The issue of aluminum tank waste is no longer on the list of resolutions. How is it being dealt with?

R. [DOE-ORP] DOE-ORP has been directly supporting glass development studies since 2000 and will continue to do so. Bechtel is focusing on the design of the PT Facility. The operating contractor will handle the glass design.

Q. How will new issues be managed in the future if there are ongoing technical issues to be resolved?

R. [DOE-ORP] Bechtel was challenged in creating a plan that DOE-ORP would accept, based on the review of the technical issues. DOE-ORP is not at a point of identifying fundamental design issues in the PT Facility.

C. It is very likely iodine-129 will bleed pass the intended control point in the LAW off-gas system. The good news for LAW off-gas is it uses sulfur-impregnated carbon for removal of mercury. Management of the carbon beds to have the off-gas flow past some carbon with absorbed mercury will absorb iodine-129 as an unintended benefit. There are about 8 metric ton of mercury in the tank waste system; the BBI states mercury inventory at 1 metric ton and is incorrect. Iodine-129 control in HLW off-gas should work well because of the use of silver mordenite.

R. [DOE-ORP] It depends on the form of iodine, based on the oxidation state. DOE-ORP can gather more specific information and follow up with TWC.

C. If the appropriate carbon type is chosen, the charcoal will not remove the iodine.

R. [DOE-ORP] The selection of material is important. Thank you for the input.

Q. Will most of the technical resolutions be resolved between October and December?

R. [DOE-ORP] By December 2016, technical issues T-1, T-2, and T-3 should be resolved. The other actions will continue through FY 2017.

The TWC thanked Langdon and Dan for their presentation and perspectives. Dirk Dunning noted that an update on the WTP technical issues resolution would be timely after January 2017.

Effluent Management Facility Planning

Agency Presentation

Jason Young, DOE-ORP, provided an update on the Effluent Management Facility (EMF) planning and permitting processes. Key points from Jason's presentation⁵ include:

- The EMF will provide four key services to support direct feed low-activity waste (DFLAW) including:
 - A low point drain for waste transfer line flushing
 - An evaporator will concentrate fluids from the LAW off-gas treatment system
 - Condensate from the evaporator overheads will be transported to the Liquid Effluent Retention Facility (LERF) via the existing transporting piping
 - The evaporator concentrate will be recycled into the LAW vitrification process
- Currently, DOE-ORP is working to obtain three dangerous waste permit modifications. The permit modifications for EMF include:

Attachment 5: Effluent Management Facility Permitting Update (DOE-ORP, 8/10/16)

- Secondary containment permit which will authorize the construction of the basemat, stem walls, low point drain, and process walls. The permit's comment period is anticipated to begin in September or October 2016.
- Transfer lines permit which will authorize the installation of piping to transfer waste. The permit's comment period is anticipated to begin in January or February 2017.
- Processing equipment permit which will authorize the installation of the tanks and the evaporator. The permit's comment period is anticipated to begin in the Summer of 2017.
- The EMF permits will require an initial 60-day comment period and a public meeting. For Class 3 modifications, a second 45-day comment period will be held by Ecology prior to approval of the permit.
- The permits will require timely submittal and approval to stay on track with DFLAW operations, anticipated to start by 2022. In June 2016, the agencies began meeting on a bi-weekly basis to find efficiencies in the permitting process.

Agency Perspective

Joanne Grindstaff, DOE-ORP, stated that EMF construction and operations need to be on an aggressive schedule to coincide with the timeline for the LAW Facility. She noted that non-permitted activities are underway at EMF. DOE-ORP has discussed with Ecology options to start some construction work with temporary authorization. The work would occur simultaneously with the permitting process. The temporary authorization construction work would occur in specific areas of the building that need to begin construction in order to stay on the projected timeline.

Dan McDonald, Ecology, confirmed that the construction of EMF is an aggressive project. The success of the project will depend on correct permit submittals by DOE-ORP. Dan commented that temporary authorizations are designed for specific purposes and are typically discrete and small projects. Suzanne Dahl, Ecology's permit lead for EMF, is prepared to consider temporary authorizations for work on a case-by-case basis and has the opportunity to authorize activities without a formal public comment period.

Committee Questions and Responses²

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q. How big is EMF?

R. [DOE-ORP] The building is 167 feet long by 20 feet wide.

Q. Will more glass be generated from the condensate waste streams that are recycled at EMF?

R. [DOE-ORP] The overheads in the evaporator will be scrubbed of radiological material. The processes performed by the evaporator will not produce an increased volume of glass.

Q. When is the expected start date for construction?

R. [DOE-ORP] The start date for construction will depend on the permit approval process. DOE-ORP is discussing the target construction date with Ecology. The current estimated start date is sometime in the beginning of 2017. Construction is expected to be completed by June 2019.

Q. Will additional units need to be included in the design of EMF, in the event that unanticipated needs are identified at a later date?

R. [DOE-ORP] Additional units will not be added to EMF. DOE-ORP is considering potential treatment options for the concentrate that comes through the evaporator, such as trucking the material off-site.

C. It would be helpful to see a timeline that lists the necessary permits for each facility related to EMF operations.

R. [DOE-ORP] DFLAW has an integrated permit schedule. DOE-ORP presented the integrated permit schedule at a prior briefing with the TWC.

Q. Are there checks and balances for the construction of EMF?

R. [DOE-ORP] There are lessons learned from each facility that is constructed. EMF is a facility that has a low radiological content and is fairly straightforward. There is a lot of oversight as this project moves forward.

Q. What transfer lines require a permit to transfer waste?

R. [DOE-ORP] The transfer lines that will connect LAWPS to EMF will require a permit.

Q. Is there a transfer line between EMF and tank farms?

R. [DOE-ORP] Yes, the capability needs to exist to transfer waste from EMF to tank farms, if necessary. However, the primary function of EMF is to concentrate and recycle low-activity waste and not send waste to the tank farms.

C. There are concerns about a lack of evaluation in the tank farms of the concentrated halites that cause corrosion.

R. [DOE-ORP] It is a different metal than the metal used in the 242-A Evaporator.

Melanie Myers, TWC vice chair, requested that Jason provide an update on the EMF permitting processes in December 2016.

Review of HAB Fiscal Year 2017 Work Plan

Melanie Myers-Magnuson, TWC vice chair, reviewed the FY 2017 HAB work plan⁶. TWC members and agency representatives provided comments on future work plan topics. TWC members also discussed whether writing white papers or advice was efficient for the risk-based retrieval and regulatory streamlining topics. Majority of the TWC agreed that advice is a more efficient product.

Committee Business

*TWC 3-Month Work Plan*²⁷

The TWC will plan to hold a committee meeting in October 2016 that will tentatively include the following topics:

- Critical infrastructure update (potentially joint with the River and Plateau Committee and the Health, Safety, and Environmental Protection Committee)
- Risk-based retrieval, treatment, and closure discussion framing
- Streamline regulatory input and permitting processes discussion framing

In November 2016, the TWC will tentatively meet to continue discussions on the risk-based retrieval, treatment, and closure processes and the streamline regulatory input and permitting processes. The TWC will also receive updates on the Tank Integrity Program and DFHLW.

In January 2017, the TWC will tentatively meet to receive an update on the WTP technical issues resolution and continue discussions on risk-based retrieval, treatment, and closure processes.

Attachments

Attachment 1: Vapor Monitoring, and Detection System (VDMS) Technologies (WRPS, 8/10/16)

Attachment 2: Transcribed Flipchart Notes

Attachment 3: Tank Integrity Program Overview (DOE-ORP, 8/10/16)

Attachment 4: WTP Technical Issue Resolution Update (DOE-ORP, 8/10/16)

Attachment 5: Effluent Management Facility Permitting Update (DOE-ORP, 8/10/16)

Attachment 6: FY 2017 HAB Work Plan

Attachment 7: TWC 3-Month Work Plan

Attendees

Board members and alternates:

David Bernhard	Steve Hudson	Kristin McNall (phone)
Amoret Bunn	Emmitt Jackson	Melanie Myers
Shelley Cimon	Alex Klementiev	Ken Niles (phone)
Shannon Cram (phone)	Pam Larsen	Vince Panesko
Dirk Dunning	Phillip Lemley	Jean Vanni

Others:

Dieter Bohrmann, North Wind/DOE-ORP	Jim Alzheimer, Ecology	Bruce Schappell, BNI
Joanne Grindstaff, DOE-ORP	Steven Lowe, Ecology	Staci West, BNI
Langdon Holton, DOE-ORP	Dan McDonald, Ecology	Patrick Mills, CTUIR (phone)
Jeremy Johnson, DOE-ORP	Beth Rochette, Ecology	Samantha Herman, EnviroIssues
Dawn McDonald, DOE-ORP	Randy Bradbury, Ecology	Ryan Orth, EnviroIssues
Jason Young, DOE-ORP	John Martell, Washington State Department of Health	Michael Turner, MSA (phone)
Paula Call, DOE-RL (phone)	Tom Rogers, Washington State Department of Health	Shintaro Ito, PNNL
		Rod Skeen, PNNL (phone)
		Kayle Boomer, WRPS
		Neil Davis, WRPS
		Jessica Joyner, WRPS
		Mark McKenna, WRPS
		Ruben Mendoza, WRPS
		Anthony Miskho, WRPS
		Andrea Prignano, WRPS
		Karthik Subramanian, WRPS
		Ted Venetz, WRPS
		Eric Wilson, WRPS